

(43) International Publication Date 16 December 2004 (16.12.2004)

PCT

(10) International Publication Number WO 2004/108312 A1

(51) International Patent Classification7:

(21) International Application Number:

PCT/JP2004/008152

B21B 27/10

(22) International Filing Date:

4 June 2004 (04.06.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2003-162490

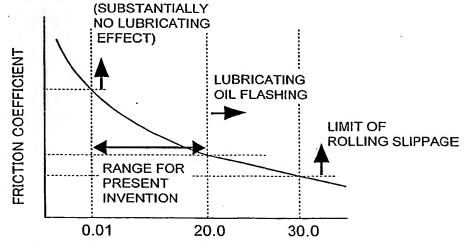
6 June 2003 (06.06.2003) JI

- (71) Applicant (for all designated States except US): NIP-PON STEEL CORPORATION [JP/JP]; 6-3, Otemachi 2-chome, Chiyoda-ku, Tokyo 1008071 (JP).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): INOUE, Tsuyoshi [JP/JP]; C/o Nippon Steel Corporation Technical Development Bureau, 20-1 Shintomi, Futtsu-shi, Chiba 2938511 (JP).

- (74) Agent: KOKUBUN, Takayoshi; 5th Floor, Ikebukuro TG Homest Building, 17-8, Higashi-Ikebukuro 1-chome, Toshima-ku, Tokyo 1700013 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: LUBRICATED HOT ROLLING METHOD



AMOUNT SUPPLIED OF LUBRICATING OIL (cm3/m2)

(AMOUNT SUPPLIED OF LUBRICATING OIL PER 1m² OF ROLL SURFACE AREA)

is (57) Abstract: In a lubricated hot rolling method using a lubricating oil which contains one kind or two or more kinds among an high-basic alkaline-earth metal phenate, high-basic alkaline-earth metal carboxylate, high-basic alkaline-earth salicylate, or high-basic alkaline-earth metal sulfonate having a basicity of 40 mgKOH/g or higher, and has a viscosity at 40 C of 800 cSt or less, rolling is performed by granulating or atomizing the lubricating oil into particulates whose average size is less than 1 mm, supplying it to rolls by using a noncombustible gas whose flow rate is 2000 cm¿3? or more per minute per lubricating nozzle and whose velocity is 1 m or more per second, and controlling the amount supplied of the lubricating oil to 0.01 cm¿3? or more and 20 cm¿3? or less per 1 m¿2? of a surface area of the rolls.

BEST AVAILABLE COPY

Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

BEST AVAILABLE COPV

REST AVAILABLE CODY